

The Sloan Digital Sky Survey Quasar Lens Search Naohisa Inada (Nara National College of Technology) and the SQLS team (e-mail to: inada@libe.nara-k.ac.jp)

We have completed the Sloan Digital Sky Survey Quasar Lens Search (SQLS), that is a lensed quasar survey based on the **SDSS-I and –II** spectroscopically confirmed quasars (from Early Data Release to Data Release 7). From the 44 discoveries and 18 identifications of previously known lensed quasars, the SQLS is now recognized as the current largest lensed quasar survey. In the course of the SQLS, the UH88 telescope is playing an important role, both for the discoveries and for the detailed follow-up observations of the SQLS lenses. Below we summarize the results obtained mainly from the uses of the UH88 telescope. We are now continuing the lensed quasar survey using the **SDSS-III** data.

Awarded UH88 nights for the SQLS from 2004A:

year	instrument	# of nights	condition
2004A	UH8k	2	unknown
2004B	UH8k	2	unknown
2005A	QUIRC	2	unknown
	WFGS2	2	0.0
2005B	WFGS2	2	0.0
2006A	Optic	1	0
	WFGS2	2	×、О
2006B	Optic→tek2k	2	0.0
	WFGS2	1	0
2007A	WFGS2	1	0

QUIRC	2	unknown	
WFGS2	2	0.0	
WFGS2	2	0.0	
Optic	1	0	
WFGS2	2	×、O	
Optic→tek2k	2	0.0	
WFGS2	1	0	
WFGS2	1	0	
Tek2k	1	0	
	QUIRC WFGS2 WFGS2 Optic WFGS2 Optic→tek2k WFGS2 WFGS2 WFGS2	QUIRC2WFGS22WFGS22Optic1WFGS22Optic→tek2k2WFGS21WFGS21WFGS21Tek2k1	

40 nights in total !

Recently discovered lenses:



References:

See the following papers for more details.

Oguri et al. 2012 AJ 143 120; SDSS Quasar Lens Search VI Inada et al. 2012 AJ 143 119; SDSS Quasar Lens Search V Inada et al. 2010 AJ 140 403; SDSS Quasar Lens Search IV

SDSSJ1320+1644; lensed by a galaxy group with $\theta = 8.6''$, although the possibility of a binary quasar cannot be fully excluded.

lensed quasar with $\theta = 0.8''$. The lensing hypothesis is confirmed by LGS+AO188 of the Subaru telescope.

Oguri et al. 2008 AJ 135 512; SDSS Quasar Lens Search III Inada et al. 2008 AJ 135 496; SDSS Quasar Lens Search II Oguri et al. 2006 AJ 132 999; SDSS Quasar Lens Search I Rusu et al. 2013 ApJ 765 139; SDSSJ1320+1644 Rusu et al. 2011 ApJ 738 30; SDSSJ1334+3315 McGreer et al. 2010 AJ 140 370; current most distant lens QSO Kayo et al. 2010 AJ 139 1614; discovery of 8 new lenses Inada et al. 2009 AJ 137 4118; discovery of 5 new lenses Oguri et al. 2008 MNRAS 391 1973; SDSSJ1330+1810

+ more than 10 papers!

<u>Constraints on Cosmological Parameters:</u>

From our extensive follow-up observations using the UH88 and other telescopes, we are constructing statistical samples of lensed quasars. We use the 19 lensed quasars from the SDSS DR7 (50,826 quasars), for the final statistical analysis. Again, the SQLS represents the current largest statistical lens

Object	$N_{ m img}$	z_s^{a}	$z_l^{ m b}$	$i_{\mathrm{PSF}}{}^{\mathrm{c}}$	$ heta_{ m max}{}^{ m d}$	$I_{\rm QSO}$ ^e	$I_{\rm gal}~^{\rm f}$	Ref.
SDSS J0246-0825	2	1.686	0.723	17.76	1.09	17.80	20.78	1,2,3
SDSS J0746+4403	2	1.998	0.513	18.71	1.08	18.71	19.62	4,5
SDSS J0806+2006	2	1.538	0.573	18.89	1.49	18.43	20.16	2,6,7
SBS 0909+523	2	1.378	0.830	16.17	1.11	15.94	18.81	3,8,9
SDSS J0924+0219	4	1.523	0.394	18.12	1.81	18.40	19.36	$3,\!9,\!10,\!11$
FBQ0951 + 2635	2	1.246	0.260	17.24	1.10	16.54	19.66	2,3,12
SDSS J1001+5027	2	1.841	0.415	17.32	2.86	17.32	19.63	$13,\!14$
SDSS J1021+4913	2	1.720	0.451	18.99	1.14	18.85	19.82	$14,\!15$
SDSS J1055+4628	2	1.249	0.388	18.76	1.15	18.86	19.73	$5,\!14$
PG1115+080	4	1.735	0.311	15.97	2.43	16.40	18.91	3,16,17
SDSS J1206+4332	2	1.789	0.748	18.46	2.90	18.05	19.51	13
SDSS 11216+3520	9	2 013	0.55 ± 0.05	10.08	1 40	18 30	20.31	18



sample, in terms of both the numbers of source quasars and lenses. By comparing the observed abundance of lenses with theoretical expectations, we obtain constraints on cosmological parameters, to be $W = -1.44^{+0.22}_{-0.25}$ (stat.) $^{+0.17}_{-0.18}$ (syst.) $\Omega_{\rm m} = 0.25^{+0.03}_{-0.03}$ (stat.) $^{+0.03}_{-0.02}$ (syst.) See Oguri et al. 2012 AJ 143 120 for more details.